Course Syllabus
First Semester, Academic Year 2024

1. Faculty of Agriculture at Kamphaeng Saen Department of Farm Mechanics

2. Course code: 02027361 **Course name:** Computer Programming for Agriculture I
Credit: 3(2-3-6)
Pre: -

3. Instructor team:

Dr. Chawalit Khanakornsuksan E-mail : chawalit.kh@ku.ac.th

4. Providing students with access to and advice outside of class hours:

Working days During official hours, except during teaching periods or when on official business outside of the premises. In case of emergency, students can contact us via Line group or Mobile phone.

5. Course Objectives:

5.1 Students learn and practice about network programs and computer network systems.
5.2 Students learn and practice using ready-made programs for planning and managing agricultural projects.
5.3 Students learn and practice agricultural information management.
5.4 Students learn and practice about using ready-made programs through websites in the Internet network.
5.5 Students learn and practice about the application of computer programs for agriculture.

6. Course Description:

Network programs and computer network system, computer programming and application in agricultural planning and management, information management for agriculture, computer programming and implementing of computer software for solving agricultural problems.

7. Program Learning Outcomes: PLOs (8PLOs for 2022 revised curriculum)

PLOs	Knowledge	Specific skills	Attitude
PLO5: Be able to examine an electrical circuit, electronic circuit, and mechatronics principles to control an agricultural work properly	- Computer Network Principles -Computer Programs for Planning, Problem Solving and Agricultural Management -IT in Agriculture	- Able to choose ready-made programs that are appropriate for agricultural work - Able to choose and manage IT for agriculture	- Be responsible, diligent in practice - Follow the movement of news and academic information related to - Have love for the profession and the institution that you study
PLO6: Be able to choose information technology (IT) to operate tasks appropriately		-Have skills in using IT in agriculture.	- Value and love to seek knowledge in IT
PLO7: Be able to use Thai and English language on duty for listening, speaking, reading and writing appropriately.		- Use relevant technical terms correctly in both Thai and English - Write various reports that are assigned	
PLO8: Display a willingness to be responsible, disciplined, diligent, patient, and honest, human relations in working		-Be a good leader and follower -Have problem-solving skills	-Be responsible and disciplined in your work - Be diligent and patient - Be punctual

with others, be a good leader and follower and have a relationship with the organization.			- Be honest

8. Course Learning Outcomes: CLOs and Methods for measuring learning outcomes

Course Learning Outcomes	Methods for measuring learning outcomes	PLOs
CLO1: Describe network programs and computer network systems. CLO2: Present agricultural data using appropriate computer programs.	1. Explain, present and answer questions, network programs and computer network systems, and agricultural data using appropriate computer programs. 2. Submit assigned assignments on time and completely by selecting appropriate language (PLO7) and information technology (IT) (PLO6).	PLO5 PLO6 PLO7
CLO3: Use Microsoft Power BI and Google Sheet to plan, analyze and solve problems, and manage agriculture. CLO4: Create a data collection system from sensor measurements.	3. Evaluate the skills of the individual and provide advice during the individual practice. 4. Evaluate the work from the assigned tasks. Individuals take each practice test. All students must pass a minimum of 60 percent (if they fail, they must do it again until they pass). 5. Term Project (Group)	
CLO5: Display a responsible, moral, ethical, disciplined, punctual, honest, and responsible.	6. Attend classes and be attentive to learning and practice and submit assigned work on time.	PLO8
CLO6: Have the skills to work with others as a good leader and member and can adapt to various situations appropriately. towards themselves and society.	7.Evaluate group work skills and provide advice on how to interact well in group work.	

9. Academic achievement measurement

9.1 Students must attend both lectures and practical classes for at least 80 percent of the total class time.

9.2 Assessment criteria and academic achievement measurement

9.2.1 Lecture section	1) Basic of Microsoft Excel	10%
	2) Basic of Microsoft Power BI and Google Sheet	10%
9.2.2 Laboratory section	1) Examine the application of the program Microsoft Excel in agriculture	10%
	2) Examine the application of the program Microsoft Power BI and Google Sheet in agriculture	10%
9.2.3 Research/work report/submission of notebook/lecture study	1) Usage exercises Microsoft Excel	20%
	2) Usage exercises Microsoft Power BI and Google Sheet	20%
	3) Present the data collection set from the sensor and present the chart obtained from the sensor measurements (group project)	10%
9.2.4 Interest in learning, determination to do the work, responsibility and teamwork	1) responsibility	10%

Total 100%

Score level	>80	75-79	70-74	65-69	60-64	55-59	50-54	<50
Grade	A	B+	B	C+	C	D+	D	F

10.Documents to read:

Books or documents related to current subject matter

Microsoft. (2023). Excel video training, Searched on January 22, 2024.from https://support.microsoft.com/en-us/office/excel-video-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb

Google. (2023). Learn Looker Studio, Searched on March 10, 2024. From https://support.google.com/looker-studio/topic/12398462?hl=en&ref_topic=6267740&sjid=17523610849119995061-AP

11. Evaluation of teaching results:

From the student's questionnaire, students must evaluate their teaching results at www.kps.ku.ac.th (go to Students, Teaching System) with the university's teaching evaluation form before the mid-term and final exams.

12. Review to improve teaching methods and teaching systems:

□ No review because students ……..

☑ **Reviewed by reviewing from:** Student evaluation results and examination results

□ Not revised……

☑ **Revised to be consistent with**: Student evaluation results: 32 out of 38 students (84.21%) were evaluated in the system. The following suggestions were made for improving teaching methods and teaching systems: “Adjust the lunch break time by avoiding the time when the cafeteria is crowded”

13. Teaching improvement from teaching evaluation results:

□ No teaching evaluation

☑ **Teaching evaluation,** 4.51 With suggestions for improving teaching: “Adjust the lunch break time to avoid times when the cafeteria is crowded.”

□ No improvement, ……

☑**Improvements as follows**: Adjust the lunch break time to avoid the time when the cafeteria is crowded.”

14. Schedule of activities related to teaching and learning (see Table 1)

Signature…….

(Dr. Chawalit Khanakornsuksan)

18 June 2024

Table 1: Schedule of activities related to teaching and learning of 02027361 First Semester, Academic Year 2024
Thursday: Lecture 10:30-12:30 and Practical 13:00-16:00

No	Lesson	LLOs	L-Level	Teaching/Learning method	Assessments	Instructor	CLOs	PLOs
1.	**Lesson 1: Network programs and computer network systems**	-Able to explain network programs and computer network systems	K: An S: Precision A: Valuing	**Clarify and agree on details** of learning outcomes (LLOs, CLOs and PLOs), teaching methods, assessment and measurement of learning outcomes via Course Syllabus uploaded on Edu-Farm and teaching materials uploaded on Edu-Farm		Chawalit	CLO1 CLO2 CLO5 CLO6	PLO5 PLO6 PLO7 PLO8
	Lesson 2: Using Microsoft Excel for data analysis and chart presentation in agriculture	-Able to explain basic commands that must be used in Microsoft Excel -Able to use Microsoft Excel commands to solve basic mathematical problems		**- Lecture teaching with practice on specified topics, allowing students to learn and ask question0s until they understand.**	**Lecture** - Final lecture exam (3rd week exam) **Laboratory:** - Evaluate students' practical skills and provide advice during the operation - Check students' program usage results during teaching. - Submit the operational report on Edu-Farm before the next class			
2-3.	2.1 Creating conditional calculation formulas -Thinking process and important variables of conditional work - Flow chart of conditional thinking process -Describe and practice using conditional calculation formulas using Microsoft Excel	-Able to explain the principles of using conditional commands in Microsoft Excel. - Able to use Microsoft Excel conditional commands to solve problems that require calculation conditions. Using conditional calculation formulas		- Explain the use of important functions with examples and practice using them with simple data.			CLO2 CLO3 CLO5 CLO6	
4.	2.2 Data Presenting in chart form -Types, importance and components of data presenting in chart form - Charts created by using Microsoft Excel	-Able to explain the differences of each type of chart. - Students can create charts to present data.		- Explain the use of important functions with examples and practice using them with simple data.				

No	Lesson	LLOs	L-Level	Teaching/Learning method	Assessments	Instructor	CLOs	PLOs
5.-6	**Lesson3: Summarizing and presenting data using Pivot tables** -Thought processes and important variables in Pivot tables creating - Pivot tables Created by using Microsoft Excel - Data Summarize and presentation by using Pivot table - Data Presentation in overview form as Dashboard	-Able to explain the principles of using Pivot table to create data summaries by using Microsoft Excel. - Able to use Pivot table to summarize data. - Able to interpret the meaning of data displayed in Pivot table. -Able to present data in Dashboard from by using data from Pivot table		**Lecture-based teaching with practical work on specified topics, allowing students to learn and ask questions until they understand.** - Explain how to create a Pivot table with examples and practice using simple data. -Explain the steps for creating a Dashboard using data from a Pivot table, with examples and simple exercises on how to use the data.				
7-8.	**Lesson 4: Programming to collect measurement data from sensors using Arduino board** 4.1 Programming to collect measurement data from sensors 4.2 Connecting devices to the Microcontroller board	- Able to explain the principles of data measured recording from sensor. - Able to apply the Microcontroller board to record measurement data from the sensor. - Able to apply Microsoft Excel to present data obtained from the sensor.		**Lecture-based teaching with practical work on specified topics, allowing students to learn and ask questions until they understand.** -Assign group work to students to create a measurement kit that can collect measurement data from sensors.	- Evaluate students' knowledge and practical skills by asking questions -Check students' program usage results during teaching -Assess group work (using Rubric) of a measurement set that can collect measurement data from sensors		CLO4 CLO5 CLO6	
9-10.	4.3 Recording of measured data from sensors 4.4 Presenting of recorded data from microcontroller sensors	- Able to apply computer programing to present recorded data.						
11.	**Lesson 5: Using Microsoft Power BI to present chart data in agriculture** 5.1 Using the necessary basic tools	-Able to explain basic commands that must be used in Microsoft Power BI program. -Able to use Microsoft Power BI commands to present data.		**Lecture-based teaching with practical work on specified topics, allowing students to learn and ask questions until they understand.** -Explain the basics and necessary tools, with examples and practice using sample data. -Explain the principles of data linking and the tools required for use, with examples and practice using sample data.	- Evaluate students' practical skills and provide guidance during the practice. - Submit the practice results file on Edu-Farm before the next lesson.		CLO3 CLO5 CLO6	
12.	5.2 Applying Microsoft Power BI to agriculture	-Able to manage data and link it to data presentation using Microsoft Power BI.						
13.	**Lesson 6: Using Google Sheet to store basic information**	- Able to apply Google Sheet program to collect and compile data.						

No	Lesson	LLOs	L-Level	Teaching/Learning method	Assessments	Instructor	CLOs	PLOs
14-15.	**Lesson 7: Using Google Studio to present data in chart form**	- Able to apply Google Studio program to present data obtained from sensors.						